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Inspections of COMMERCIAL FERTILIZERS—1983

By Lester Hankin

Chemical analyses of 264 official samples of fertilizer collected during 1983 by inspectors of the Connecticut Department of Agriculture are presented in this Bulletin.

Table 1 shows individual samples from 30 manufacturers. The number designating each sample, as for example 10-10-10, indicates the guaranteed percentage for nitrogen (N) phosphoric acid (P_2O_5), and potash (K_2O), in that order. A brand name, if available, follows. The actual content found in an official sample is then shown, with deficiencies in italics. Table 2 summarizes for each manufacturer the number of guarantees examined for each plant nutrient, the percentage of the samples not meeting their guarantees, and the average percentage of guarantee found. Table 3 shows distribution of mixed fertilizers sold in Connecticut. Only formulations with analyses from more than three manufacturers are shown; others are placed in the miscellaneous category. The tonnage of fertilizer material and mixed fertilizer sold in Connecticut is shown in Table 4.

Two types of variability affect fertilizer analysis and must be considered in judging deficiencies. The first is

the variability among different batches of the same formulation from a manufacturer. This variability can be noted in Table 1 by examining the analyses of the same formulations from the same manufacturer. The second type of variability is between duplicate analyses of the same sample. The variability among duplicates is shown in the statement: the mean difference between duplicates for nitrogen and potash are one-third percent and for phosphoric acid, one-quarter percent.

Fertilizer samples are deemed deficient in any nutrient if the analysis is below the guarantee by more than values established by the Association of American Plant Food Control Officials.

Analyses were performed by M.A. Illig, H. Kocaba, and M. Pyles. Samples were collected by J. Dippel, A. VanDyke, and D. Nisely under the direction of K. Veit. Fertilizer laws are administered by the Commissioner of Agriculture.

Lester Hankin

Chief, Analytical Chemistry

Table 1. Analysis of Individual Samples of Commercial Fertilizers.

Manufacturer, guarantee, & brand				Nutrients found, %			Manufacturer, guarantee, & brand				Nutrients found, %		
AGRICOCO				N	P ₂ O ₅	K ₂ O	AGWAY (continued)				N	P ₂ O ₅	K ₂ O
5-10-10				3.2	6.3	4.9	22-10-20				22.1	9.4	22.9
5-10-10				6.1	8.8	7.9	22-11-15	Agway Blend			22.4	10.1	21.6
6-3-6				6.1	3.0	6.2	22-13-18	Agway Blend			22.9	14.2	17.9
6-3-6				6.6	2.3	5.6	23-11-17				23.9	14.0	19.3
8-24-16				7.4	23.1	14.6	23-12-18				23.3	12.8	17.0
8-40-5				8.5	36.8	5.4	23-12-18	Agway Blend			22.5	6.9	26.6
10-6-4	Village Green			11.3	5.9	4.2	23-15-15				23.7	15.2	18.4
10-6-4	Village Green			11.2	4.6	3.2	24-9-14				22.6	9.0	19.8
10-6-4				10.2	5.3	3.3	25-9-18	Agway Blend			32.2	7.0	27.9
10-8-10				10.1	6.8	9.5	25-10-16				25.8	10.6	19.0
10-10-10	Village Green			10.2	7.6	9.1	25-10-17				24.8	6.9	20.9
10-10-10				11.9	6.3	6.6	26-6-19				26.7	4.1	22.1
10-10-10				8.7	7.4	4.0	26-15-23				17.8	16.5	24.3
10-10-10				10.7	9.4	7.5	28-11-11				30.1	8.7	12.0
10-20-20				10.8	19.4	15.6	30-8-12				30.2	7.3	14.2
10-20-20				10.2	17.4	13.1	31-5-13				30.8	4.8	15.7
15-0-5				13.0		6.0	32-10-7				31.9	12.6	9.3
15-5-15				13.6	4.0	14.1	33-6-9				33.5	10.1	11.2
15-10-10				15.3	7.7	9.4							
15-15-15				14.5	14.3	15.9	ANDERSONS LAWN FERTILIZER						
17-13-26				16.0	8.9	30.3	25-3-6	Crabgrass Prev. and Lawn Food			30.6	4.7	7.3
17-13-26				16.6	15.3	28.4	26-4-8	Stanford's Old English Lawn Food			27.3	4.1	10.5
17-13-26				15.6	14.4	26.8	28-4-12	Hart's Premium Lawn Fertilizer			27.8	4.1	14.5
17-13-26				14.3	15.9	29.9							
17-13-26				18.5	15.1	25.3	C. HART SEED CO.						
17-13-26				19.2	17.3	24.4	10-6-4	Hart's Lawn Food			10.0	7.4	4.7
19-19-19				18.1	19.0	19.5	20-12-8	Hart's Professional Turf Food			20.1	11.1	8.1
19-19-19				19.2	17.6	16.6							
38-0-0	Nitroform SLO release nitrogen			37.8			CADWELL & JONES						
46-0-0	Urea			45.0			5-10-5	Surge			3.6	7.9	5.1
AGRICULTURAL PRODUCTS CO.							5-10-10	Specialty Fertilizer			5.1	12.3	11.1
5-10-5	Plant food all purpose			4.2	10.4	5.1	5-10-10	Specialty Fertilizer			5.2	8.3	9.9
10-6-4	Guardian Grow Green Lawn Food			10.2	4.3	4.1	5-10-10	Specialty Fertilizer			5.2	6.7	10.6
AGWAY							5-10-10	Specialty Fertilizer			5.3	8.8	10.8
0-3-54					3.7	55.2	5-10-10	Surge			5.1	8.8	10.2
0-10-43					10.8	45.7	5-10-10				4.9	6.1	4.7
0-15-30	Alfa B				17.9	27.6	5-10-10	Plant Food			5.1	9.2	4.6
0-16-34					17.4	37.1	5-10-10	Surge Plant and Vegetable Food			5.7	10.9	11.5
0-17-35	Agway Blend				14.0	36.3	10-2-8				9.2	2.5	8.8
0-32-13	Agway Blend				35.4	15.5	10-6-4	Surge			10.2	5.4	5.2
1-1-1	Composted Sheep Manure			1.0	0.9	0.7	10-6-4	Surge			12.7	6.9	5.8
3-17-34				3.4	18.3	36.3	10-6-4	Surge			7.7	5.3	5.5
5-10-5	Garden Plant Food			5.4	5.9	5.1	10-6-4	Surge Lawn and Garden Fertilizer			10.1	4.1	4.5
5-10-10				5.7	10.6	10.6	10-6-4	Specialty Fertilizer			9.5	4.6	3.9
5-10-10	Blend-Rite			3.7	7.4	8.9	10-10-10	Specialty Fertilizer			10.2	10.7	10.2
5-10-10	Agway Plant Food			5.0	10.1	9.5	10-10-10	Specialty Fertilizer			6.9	7.2	11.8
6-29-17				6.6	33.0	18.7	10-10-10	Specialty Fertilizer			9.0	12.3	10.0
8-4-4	Evergreen Plant Food			9.5	5.0	4.4	10-10-10	Specialty Fertilizer			10.7	8.1	10.9
8-16-16	Agway Super Garden			8.6	16.2	16.1	10-10-10	Specialty Fertilizer			9.1	7.9	9.4
9-24-24				9.2	25.5	25.3	10-10-10	Specialty Fertilizer			10.1	5.6	10.6
10-6-4	Turfood Special			10.1	7.2	4.9	19-19-19				19.8	17.7	21.1
10-10-10	Blend-Rite			11.3	10.7	13.0	20-3-10	Specialty Fertilizer, Town of Brookfield			22.7	2.4	10.6
10-10-10				11.0	12.5	10.8	20-10-10	Super Surge			19.0	12.7	10.4
10-10-10				10.2	11.8	11.5	20-10-10	Turf Doctor			20.7	11.7	12.6
10-20-20				10.2	20.1	21.2	23-6-9	Surge			23.6	5.6	9.3
10-20-20	Blend-Rite			8.6	17.1	20.6	25-7-11	Pro-turf Lawn Fertilizer			25.2	5.6	14.5
10-20-10	Corn Starter			11.7	20.2	10.0	30-0-0	Specialty Fertilizer			26.6		
15-8-12	Blend-Rite			14.9	7.8	11.3	CLAREL LABORATORIES, INC.						
15-15-15				16.0	14.2	15.2	0-6-5	Granny's Bloomers African Violets				6.9	5.1
16-16-16				17.9	12.3	22.1	CHILEAN NITRATE CORPORATION						
18-12-18				18.0	15.6	22.0	16-0-0	Champion Nitrate of Soda			13.2		
20-5-7	Greenlawn plus with crab killer			21.4	8.5	6.8	CLINTON NURSERY PRODUCTS						
18-14-23				18.2	14.0	27.3	4-10-6	New Era African Violet Food			3.8	10.6	8.8
18-18-18				18.9	19.9	20.6	5-1-1	New Era Fish Emulsion			5.1	2.2	1.7
21-5-7	Greenlawn plus with weed killer			18.3	7.5	9.3	5-10-5	New Era Plant Food			5.2	11.5	5.9
22-3-25				23.4	2.5	26.8							
22-6-8	Greenlawn plus			22.1	6.2	8.4							
22-6-8	Greenlawn plus			21.7	6.7	8.2							


Manufacturer, guarantee, & brand		Nutrients found, %			Manufacturer, guarantee, & brand		Nutrients found, %			Manufacturer, guarantee, & brand		Nutrients found, %										
CLINTON NURSERY PRODUCTS (continued)		N	P ₂ O ₅	K ₂ O	FER-MEL		N	P ₂ O ₅	K ₂ O	O.M. SCOTT (continued)		N	P ₂ O ₅	K ₂ O	OLD FOX (continued)		N	P ₂ O ₅	K ₂ O			
5-12-9	New Era African Violet Food, (powder)	5.6	13.2	9.6	12-4-8	Fer-Mel	12.9	3.6	8.2	26-3-3	Scott's Turf Builder + 2	26.3	3.1	3.3	19-19-19	Old Fox	19.3	15.8	21.0			
					20-0-10	Fer-Mel Turf Food	21.0		12.0	27-3-3	Scott's Turf Builder	25.0	2.7	3.7	20-4-8	Old Fox Green Gro	21.2	4.6	9.2			
7-15-8	New Era Plant Food	7.6	17.1	8.9	20-4-8	Fer-Mel Fairway Turf Food	18.2	3.7	9.1	27-3-3	Scott's Turf Builder	26.6	2.8	2.9	20-10-10	Old Fox	20.7	7.5	11.8			
12-6-6	New Era Solid Plant Food	13.3	8.0	7.8	20-5-10	Fer-Mel Fairway Turf Food	21.2	5.1	10.3	36-4-4	Scott's Super Turf Builder	35.3	4.7	4.0	20-10-10	Old Fox	18.5	8.1	14.4			
15-30-15	New Era Formula 70 Plant Food	15.2	31.7	14.1	20-12-8	Hart's Pro Turf Food	19.3	12.4	8.8						30-3-10	Old Fox Power Green	28.6	3.4	10.3			
					25-5-10	Fer-Mel Premium Lawn Food	27.0	4.7	11.0	OLD FOX						46-0-0	Old Fox	44.1				
					25-5-10	Fer-Mel Lawn Food	24.7	5.2	11.6	3-12-10	Old Fox	3.6	10.2	11.0								
					28-7-14	Fer-Mel	31.2	6.6	14.7	5-10-5	Garden Pride Garden Food	4.2	8.4	6.3	OPTIFLORA, INC.							
ESPOMA COMPANY							GENSTAR CHEMICAL, LTD.									14-12-14	Optimara Violet Food	13.7	12.1	14.7		
4-3-2	Plant-Tone	4.0	4.8	2.3						5-10-10	Old Fox	4.7	8.4	11.1	PLANT MINDER, INC.							
4-3-2	Plant-Tone	4.8	5.3	4.4						5-10-10	Old Fox	4.6	10.3	10.8								
4-6-4	Holly-Tone	4.6	7.7	4.2			34-0-0	Bulls Eye	31.3	5-10-10	Old Fox	5.0	8.4	13.2			3-3-1.5	Plant Minder Root Juice	3.3	3.5	1.6	
4-6-4	Holly-Tone	5.0	6.1	6.7						5-10-10	Old Fox	5.9	7.9	10.1	PLANT RESEARCH LABS							
4-6-6	Garden-Tone	4.4	8.7	6.8			INTERNATIONAL SPIKE, INC.									1-2-1	Oxygen Plus Indoor Plant Food	1.2	2.2	1.2		
6-6-4	Rose-Tone	5.6	8.8	4.2			20-20-20	Jobe's Plant Food	17.8	19.9	21.9	6-4-6	Old Fox	5.4	3.0	7.3	ROSS DANIELS					
6-6-4	Rose-Tone	5.9	6.8	5.0								10-6-4	Old Fox Estate Green	8.6	9.7	9.4						
					JOHN D. LYON							10-6-4	Old Fox Turf Green	8.8	5.0	6.5						
ESTECH GENERAL CHEMICAL COMPANY							20-5-10	Lyon Lawn Fertilizer	19.6	4.5	10.2	10-6-4	Old Fox Turf Green	11.7	4.8	7.3						
0-20-0	Gro-Tone Super Phosphate	22.1	.									10-8-10	Old Fox Tobacco Fertilizer	10.4	5.0	12.1						
5-10-5	Swift's Plant Food for Lawn and Garden	12.7	9.3	10.5	LEBANON CHEMICAL							10-10-10	Old Fox	8.7	10.1	10.8						
5-10-5	K-Mart Lawn and Garden	3.3	3.9	5.8	5-10-5	Hart's All Purpose Plant Food	5.4	10.2	5.3	10-10-10	Old Fox	8.8	10.5	13.3			3-8-8	Ross—Special Evergreen Stakes	12.4	19.3	11.1	
5-10-5	Liberty Plant Food	5.0	7.1	3.1	10-6-4	Hart's Lawn Food	10.0	6.7	11.4	10-10-10	Old Fox	8.9	17.2	20.2			16-10-9	Ross-Gro Stakes Trees and Shrubs	16.7	10.1	9.7	
5-10-5	Perk Up Plant Food	4.4	9.3	5.7	10-6-4	Hart's Two for One Fertilizer and Weed Killer	12.8	8.2	6.3	10-20-20	Old Fox	12.1	0.9	6.2			16-10-9	Ross Super Stakes	16.4	7.0	9.9	
5-10-10	Red Steer	4.2	9.3	9.4						12-1-6	Old Fox Green and Tee	9.9	1.5	11.2	STANFORD SEED COMPANY							
5-10-10	Red Steer	5.0	9.1	9.9	10-6-4	Green Gold Crab Kill and Lawn Fertilizer	11.4	6.4	4.2	12-2-8	Old Fox Fair Gran	12.5	3.0	10.6			18-3-5	Old English Soil Insecticide and Fertilizer with Diazinon	20.2	5.7	9.3	
5-10-10	Suburban	4.7	7.9	6.0						15-4-8	Holdridge Super Lawn Care	15.3	4.9	8.0	W R. GRACE COMPANY							
5-10-10	Suburban	8.2	12.0	9.3	9-5-3	Lebanon Acre	12.3	7.4	5.1	15-4-8	Old Fox Super Lawn Gro—40% N organic	13.4	4.2	10.0			12-36-14	Peter's African Violet Special	12.7	38.6	14.0	
6-2-0	Gro-Tone Nitrogranic	5.5	5.0		9-8-8	Rose Food	9.3	10.5	10.1	15-10-10	Old Fox	13.8	11.3	8.4			33.5-0-0	Grace Nitrex	29.3			
6-8-6	Gro-Tone Evergreen Food	6.1	7.0	6.1	9-17-9	Green View Green Start	8.5	17.1	10.6													
6-9-5	Vigoro Rose Food	6.1	4.8	5.4	9-17-9	Green View Green Start	9.5	18.9	11.3													
6-10-4	Vigoro All Purpose Fertilizer	6.8	14.6	4.7	10-10-10	Lebanon Multi Purpose Fertilizer	10.6	11.1	10.2													
7-10-5	Gro-Tone Rose Food	6.1	10.3	6.7	10-20-10	Green View Garden Mate	10.8	18.3	12.9													
10-3-6	Blue Seal Turf Green	10.6	3.9	6.5	12-10-10	Green View Shrub Mate	12.4	10.8	11.3													
10-6-4	Deerfield Lawn Food	10.3	4.6	4.5	18-3-12	Lebanon Country Club	18.6	3.2	12.0													
10-6-4	Perk Up Lawn Food	8.2	4.8	4.9	22-4-4	Green View Crabicide Green	26.1	4.7	5.9													
10-6-4	Perk Up Lawn Food	10.0	5.0	5.7	25-3-3	Sears Superfine Weed and Feed	25.9	2.7	3.4													
10-6-4	Park Ridge All Purpose	9.8	6.7	2.3	30-4-4	Green View Green Power	30.2	3.8	4.4	Table 2. Summary for Each Manufacturer of Number of Claims for Individual Plant Nutrients, Percentage of Claims Not Meeting Guarantee, and Average Percentage of Guarantee for Each Nutrient												
10-6-4	Liberty Lawn Food	10.4	4.5	3.8	30-4-4	Green View Green Power	31.6	3.6	4.7	Company	No Samples	Number of Claims			% Not Meeting Claim			Average % of Claim				
10-6-4	Liberty Lawn Food	9.5	4.2	5.0	30-4-4	Green View Green Power	30.9	4.3	4.2			N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O		
10-6-4	Lawn Craft Turf Food	10.2	3.9	2.0	30-4-4	Green View Green Power	32.0	3.8	4.1	AGRICO	30	30	27	28	30.0	59.3	42.9	100	91	91		
10-10-20	Gro-Tone Fall Fertilizer	10.0	8.4	21.0						AGRICULTURAL PRODUCTS CO	2	2	2	2	50.0	50.0	0	93	88	102		
10-10-20	Gro-Tone Fall Fertilizer	9.1	10.7	16.5	LOFT'S SEED, INC.						AGWAY	52	46	52	52	8.7	21.2	1.9	103	104	112	
10-10-10	Park Ridge All Purpose	7.3	4.6	7.3	13-11-15	Loft's Fall Feed and Seed Starter	11.5	11.8	20.0			ANDERSONS LAWN FERT	3	3	3	3	0	0	0	107	121	125
10-10-10	Suburban	10.1	7.6	17.1	28-3-8	Loft's Lawn Food	32.1	3.7	10.6			C. HART SEED COMPANY	2	2	2	2	0	50.0	0	100	108	109
12-4-8	Gro-Tone Turf and Tree Food	10.4	4.6	7.1	LOTT'S RED SEAL COMPANY						CADWELL & JONES	28	28	27	27	28.6	51.9	0	99	91	110	
15-8-12	Red Steer	15.4	13.3	14.1	28-3-3	Lott's Lawn Food	27.4	3.3	10.4			CLAREL LABORATORIES	1	0	1	1	—	0	0	—	115	102
20-0-16	Per-Ex	11.9		17.7								CHILEAN NITRATE CORPORATION	1	1	0	0	100	—	—	83	—	—
20-0-16	Per-Ex Slow Release	20.1		16.2								CLINTON NURSERY PRODUCTS	7	7	7	7	0	0	0	105	129	125
20-5-5	Vigoro Lawn Fertilizer for North Lawn	21.6	3.8	4.9	MILWAUKEE METRO SEWERAGE DISTRICT						ESPOMA COMPANY	7	7	7	7	0	0	0	109	139	136	
20-3-10	Terre Weed and Feed	21.0	4.7	8.3	6-2-0	Milorganite Activated Sewage Sludge	6.7	3.2				ESTECH GENERAL CHEM. CO.	48	47	46	46	28.3	41.3	26.1	101	107	109
20-5-10	Liberty	20.3	7.9	10.0								FER-MEL	8	8	7	8	12.5	0	0	105	97	110
20-10-5	K-Mart Lawn Food	17.1	7.3	2.3	NEW ENGLAND FARMS, INC.							GENSTAR CHEM	1	1	0	0	100.0	—	—	92	—	—
20-3-10		16.6	2.7	7.3	1-3-0.5	Mother Nature 100% Natural Organic Plant Food	0.8	0.6	0.7			INTERNATIONAL SPIKE	1	1	1	1	50.0	0	0	89	100	100
20-3-10	Terre Super Lawn Spur	18.5	3.6	11.8	1-3-0.5	Organic Plant Food — 100% Natural	0.9	0.8	0.7			JOHN D. LYON	1	1	1	1	0	0	0	98	90	102
22-3-11	Gro-Tone Crab Pre and Lawn Fertilizer	22.1	3.3	19.3								LEBANON CHEMICAL	18	18	18	18	0	5.6	0	108	109	130
23-5-5	Gro-Tone Weed Control and Lawn Fertilizer	17.1	4.5	3.5								LOFT'S SEED	2	2	2	2	50.0	0	0	102	115	133
23-5-5	Gro-Tone Weed Control and Lawn Fertilizer											LOTT'S RED SEAL	1	1	1	1	0	0	0	98	110	130
23-5-5	Gro-Tone Weed Control and Lawn Fertilizer				NORSK HYDRO							MILWAUKEE METRO SEWERAGE	1	1	1	0	0	0	—	112	160	—
23-5-5	Gro-Tone Lawn Food	23.3	8.3	5.1	15.5-0-0	Viking Ship Calcium Nitrate	13.9					NEW ENGLAND FARMS	2	2	2	2	0	100.0	0	85	23	140
24-4-12	Par-Ex	24.6	6.1	13.4								NORSK HYDRO	1	1	0	0	100.0	—	—	90	—	—
24-4-12	Vigoro Lawn Fertilizer	24.6	7.4	13.2	NUTRICO, INC.							NUTRICO	1	1	1	1	0	0	0	105	92	103
24-4-12	Vigoro Lawn Fertilizer	24.2	7.7	13.8	10-6-4	Nutrigo Lawn Food—50% organic	10.5	5.5	4.1			O.M. SCOTT	7	7	7	7	28.6	0	0	99	107	103
24-4-12	Weed Control and Lawn Fertilizer	24.8	2.4	11.8								OLD FOX	30	30	29	29	43.3	44.8	6.9	97	96	123
25-3-3																						

**Table 3. Distribution of Mixed Fertilizer Sold in Connecticut
July 1, 1982-June 30, 1983**

GRADE	TONS	GRADE	TONS
4-6-4	585	20-5-10	436
5-10-5	1231	20-10-10	375
5-10-10	1080	20-20-20	59
5-20-20	13	22-4-4	86
6-24-24	30	24-12-18	194
7-7-7	29	25-3-3	642
9-5-3	12	25-3-5	81
9-17-9	20	25-5-10	302
10-6-4	2632	26-4-6	80
10-10-10	5059	27-3-3	1083
10-20-10	491		
10-20-20	365	30-4-4	322
12-4-8	73	46-0-0	519
12-10-10	18	Total	18288
15-8-12	670	Miscellaneous	16552
15-10-10	1396	Total	34840
15-30-15	94		
16-8-8	51		
19-4-4	157		
19-19-19	76		
20-4-4	27		

**Table 4. Tonnages of Fertilizer Materials and Mixed Fertilizers
Sold in Connecticut During the Period
July 1, 1982-June 30, 1983**

Commodity	Tons
<i>Chemical Nitrogen</i>	
Ammonium nitrate	131
Calcium nitrate	130
Nitrogen solutions	72
Sodium nitrate	64
Urea	1963
Ureaform	24
Other nitrogen materials	33
Total	2417
<i>Phosphates</i>	
Ammonium phosphate	8
Bonemeal	133
Phosphate rock	15
Superphosphate 20%	18
Superphosphate 46%	61
Other phosphate materials	34
Total	269
<i>Potash</i>	
Muriate of potash	565
Potassium carbonate	8
Potassium magnesium sulfate	4
Potassium nitrate	60
Potassium sulfate	9
Other potassium materials	11
Total	657
<i>Natural Organics</i>	
Cottonseed meal	216
Dried blood	12
Dried manure	3584
Linseed meal	6
Sewage Sludge	510
Gelatin	5
Miscellaneous organics	862
Total	5195
<i>Secondary and Micronutrients</i>	
Aluminum	11
Borax	17
Gypsum	84
Iron	74
Magnesium	7
Sulfur	3
Total	196
Total — commodities	8734
Total commercial fertilizers	34840
Grand total	45574



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